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Rail Road News.

Mechanics' College in Boston.

It is said that two gentlemen in Boston, propose to open a scientific school for mechanics,—apprentices, journeymen and masters,—in which a regular course of lectures and lessons are to be given in Mecchanics, Drawing, Engineering, &c., with the ultimate design of establishing an institution of high order, exclusively for the instruction of mechanics in all those branches of science applicable to their occupations. This we consider to be a grand proposition, and hope that it will be successfully carried out. The object is a noble one, and would be of vast benefit to Boston. The only difficulty lies in getting the mechanics to support it.

Revolutions vs. Railway Speculations.

An English writer, in remarking upon the events of the two past years, says that in England, during that period, Government securities were deteriorated fifty per cent. more by railway speculations then by all the revolutions which convulsed Europe during the whole of the year 1849.

Ohio and Pennsylvania Railroad.

At the annual meeting of this Company held in Pittsburgh, on Thursday last, it was stated that the subscriptions to the stock of the road now exceed $1,000,000. Fifty miles have been put under contract, and the work is steadily progressing.

The gross receipts of she Connecticut River Railroad, in 1849, were $101,000—expenses, $95,000. The nett earnings of the Troy and Schenectady (N. Y.) Railroad, are not sufficient to pay the expense of running it. Mr. John Hyde, engineer of the Norwich and Worcester, Mass., Railroad, has run the New York steamboat train for seven years, and during the whole of that time has never had a wheel of his locomotive off the track.

The Montgomery Advertiser and Gazette of the 18th ult., learns that the freight train of the Georgia Railroad, broke through the bridge over Yellow River, at Madison, whereby it was precipitated to the depth of fifty feet, and all on board the cars were killed.

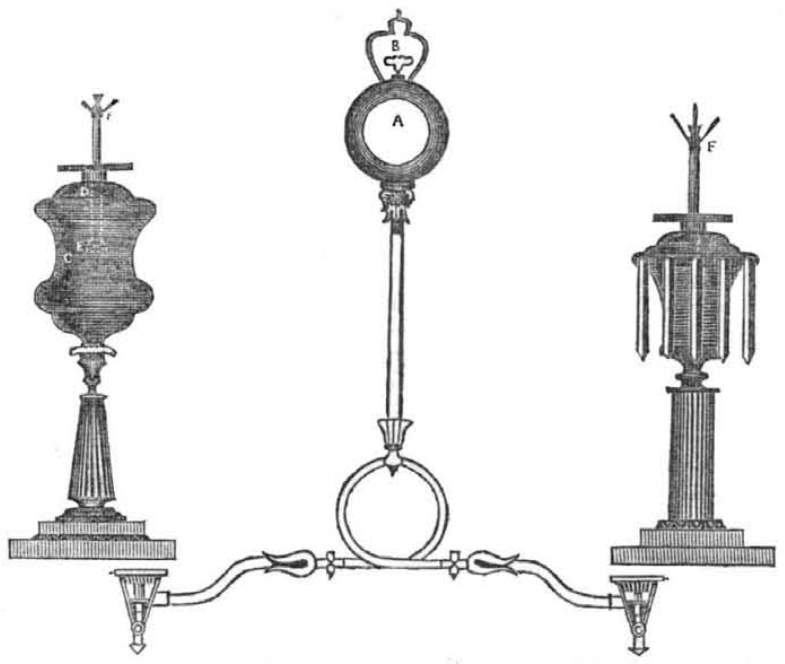
The citizens of Burlington, Vt., in a public meeting, passed resolutions requesting the Directors of the Central Railroad, to run its track from Winooski river to Lake Champlain, "through the ravine that divides the village of Burlington, whereby the proposed depots may be secured at or near the Square."

There are 431 miles of railroad in use, in Connecticut. There are 300 miles now in the course of construction, which when completed, will make 730 miles.

The Martinsburgh Gazette states that a serious accident occurred on the railroad, near Duffield's Depot lately, by which two or three burden cars were demolished, and the track much injured for some distance.

SPIRIT GAS LAMPS.

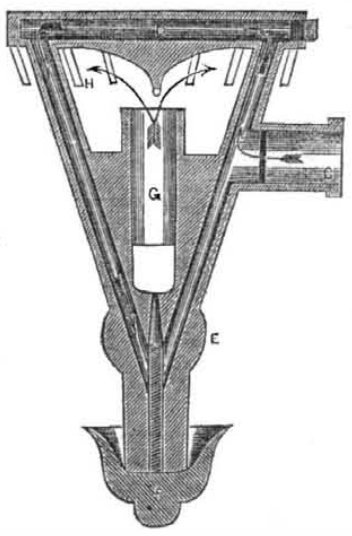
Fig. 1. Fig. 3. Fig. 2.



The name of "Spirit Gas Lamps," has become quite common. The liquid for illumination, is known by various names, but all more or less given for effect, rather than for any useful purpose. The lamps which we here present, are designed to burn the gas of the so-called "spirit-gas," which is a composition of alcohol and turpentine distilled together. No wick is burned, and only in the lamps figures 1 and 2 are wicks used, and in them only for capillary attraction.

The lamps represented in the said figures are both made and operated on the same principle, only in the one the interior is concealed by the pendants. The same letters refer to like parts. C is the reservoir of the fluid; D is a brass tube extending into the fluid, and it has a cap at the top, perforated all around. F is the flame ignition points of the gas, as it comes out of the perforations; E is the wick; the wick, by capillary attraction, carries up the fluid by heating the top of the tube,

FIG. 4.



D, until the fluid becomes gaseous, it then rushes out through the perforations, and is ignited in a state of inflammable gas, as represented at F. A great number of this kind of lamps are now used and manufactured in this city.

Figures 3 and 4, is another kind of lamp altogether. It does not use any wick at all. Nig. 3 is a front elevation of it, and fig. 4 is an enlarged section of one of the burners. A is the camphene reservoir, which can be filled at the top. B is a handle passing down the centre of the vessel and fitted to a conical valve at the bottom, where it joins the top of the central vertical tube, so that the flow from the reservoir may be cut off at pleasure. Two curved stems carry the burners, the construction of which is particularly represented in fig. 4. C on the right is the screwed attaching branch pipe. The camphene enters by this branch and passes through the diaphram as represented by the arrow, thence upward by a sloping arm into the top horizontal passage, D, which is formed on the surface of a circular disc surmounting the whole. It then descends by the opposite arm to the flattened boss, E, and rises through a small conical aperture in its centre. This aperture is fitted with a conical spindle, screwed at its lower end and in one piece with the cup, F, which answers as a nut for turning the spindle to adjust the size of the opening. The course of the gaseous matter is then directed through the central chimney, G, and is deflected by the inverted cone above it, and it then rushes out by a circular ring of eight, ten, or more jets, like those of figures 1 and 2. The burner is of brass, and the rest may be all cast in one piece, with the exception of the bottom cup. By unscrewing the cup, a wire can be introduced to remove any obstructions in the side tubes, but no obstructions are at all likely to get in them. In lighting this lamp, a few drops of alcohol is poured into the cup, F, and ignited, when the heat volatilizes the camphene in the passages of the burner, which can then be ignited, and the heat resulting from the ignition of the gases so produced, by acting upon the inverted cone at H, keeps up a continuous stream of gas. For suspension lamps, this one has no ordinary qualities to commend it. It no doubt requires attention, but the way in which it heats the fluid, and generates a very rarified gas, renders it capable of giving a very brilliant light.

The Chinese citizens of San Francisco, Cal. are mostly mechanics, and are the most temperate, peaceable and industrious inhabitants of that place. Sure we cannot call them heathen in rebuke, for they will rise up in judgement against professed christains.

Madame Arban, the wife of the celebrated aeronaut, whose melancholy fate is already known to our readers, has arrived at Madrid to fulfill an engagement entered into by her late husband previous to his last ascent, which resulted in his death.

Useful Receipts.

New Labor Saving Soap for Washing.

Dissolve ¼ lb. of lime in boiling water, straining twice through a flannel bag; dissolve separately ½ lb. of brown soap and ½ lb. of soda—boil the three together. Put six gallons of water into the boiler, and when boiling, add the mixture. The linens, which must be steeped in cold water for 12 hours, are wrung out, any stains rubbed with soap, and put into the boiler, where they must boil for thirty-five minutes. They are then drawn, (the liquor being preserved, as it can be used three times,) placed in a tub, and clear boiling water poured over it. Rub them out, rinse them well in cold water, and they are ready for drying. By this process two thirds of the ordinary labor of washing is saved; bleaching is dispensed with entirely; the clothes are much cleaner, and are less worn than by the ordinary mode of washing and the mixture no way damages the fabric.

The above is a good receipt for washing, so as to save soap, but it is severe upon the hands, being very liable to raise blisters upon them. The best thing to wash the hands with after washing, is a little warm vinegar.

To Cook Frozen Meat.

If frozen meat is brought into a warm room and thawed by heat—if you have not good teeth, and the digestive powers of an ostrich, you had best leave that part of the dinner for those who have. Therefore, bring from the larder, the night before it is wanted, the meat or poultry intended for dinner, and plunge it into cold water. The next morning, a thick coating of ice will be found encrusting the whole piece. Take it off, and change the water, and let it remain until the hour for dressing it. If to be boiled, put it over the fire in cold water—If for a roast put it not before too brisk a fire, as there is always danger that the heart of a large piece may not be completely thawed, in which case it will be spoiled.

Vegetables should be thawed in the same way, and they will be better for having been frozen with the exception of potatoes.

Quick Drying Body Copal Varnish for Coaches &c.

8lb. of the best African, Copal, two gallons of clarified oil, ½lb. of dried sugar of lead, 3½ gallons of turpentine. To be boiled till stringy, then another is to be made thus: 8lb. of fine gum anima, two gallons of clarified oil, ¼lb. of white copperas, 3½ gallons of turpentine. These to be boiled as the others, then the two are to be mixed and strained while hot. These two mixed together will dry in six hours in winter, and in four in summer; it is very useful for varnishing old work on dark colours, &c.

Best Body Copal Varnish for Coach Makers, &c.

This is intended for the body parts of coaches and other similiar vehicles, intending for polishing.

Fuse 8lbs. of fine African gum copal, and two gallons of clarified oil (old measure), boil it very slowly for four or five hours, until quite stringy, mix with three gallons and a half of turpentine; strain off and pour it into a cistern. If this is too slow in drying, coach-makers, painters and varnish-makers, have introduced to two pots of the preceeding varnish, one made as follows:—8lbs. of fine pale gum anima, two gallons of clarified oil, and three and a half gallons of turpentine, to be boiled four hours.

Composition of Friction Matches.

Chloride of potash 1½ oz., antimonium 1 oz., sulphur ¼ oz, and gum arabic and water sufficient to mix the compound and make it of the required consistence.

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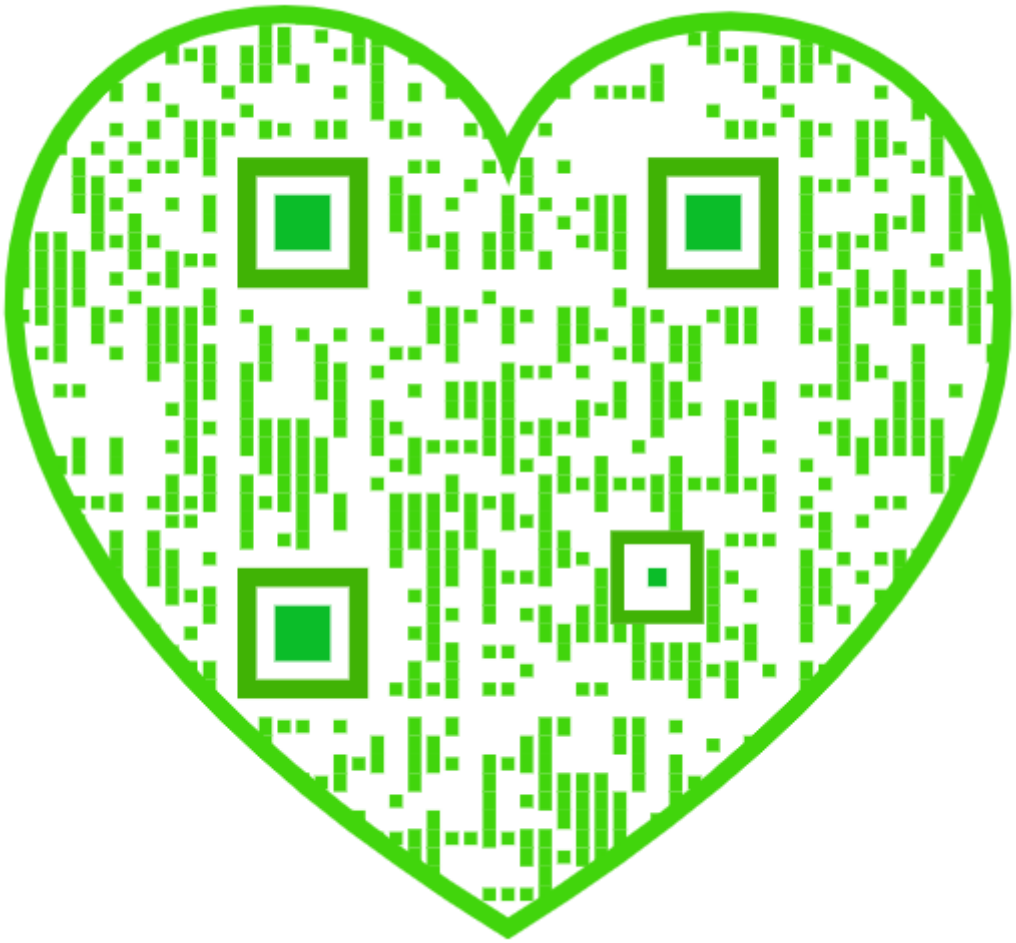

Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, Dec. 19, 1850.

The first part of the Patent Office Report for 1849, has been communicated to Congress and referred to the Committee on Printing, who, I have no doubt, will authorize the printing of 50,000 copies. The first part contains interesting historical notices of inventors from the archives of the several States, also a recommendation for the institution of national prizes, to Inventors. A marked line of division is contemplated, in future, between matters relating to Art, and those of Agriculture, which cannot fail to be acceptable to the two great classes for whose benefit this Report is published. The second part, assigned to Agriculture, will be ready in about 3 months.

At our arsenal, a few days since, with a view of tracing as far as practicable, the causes of the bursting of the cannon which killed McLean, one-half of the broken gun was sawed into strips, but, strange to tell, not the slightest defect, in any part, was discoverable. The workshops at the arsenal are in full and active operation, and under the direction of its scientific commander, this branch of the War department, renders the country a large amount of service. An immense saving to the government is now secured, by sending all the worn out anchors to this yard, when they are re-manufactured.

The Gas Company of this city is now in successful operation, and the Company will soon be ready to supply an amount of oil gas equal to 100,000 cubic feet of coal gas per day. This gas is manufactured entirely from oil, and they furnish it cheaper than it can be manufactured from coal in any place of the United States, but Pittsburg, and a part of Philadelphia. The coal gas when compared with this solar gas, will be as 2½ cubic feet to 1—a great difference truly.

Plank Roads are now becoming quite popular in this section. During the past week several companies have been formed for the construction of such roads, radiating from Georgetown. The stockholders are principally northern men.

The New York Members are making a bold push to get a branch Mint; it is thought that the Bill will pass without much opposition.—The Alabama members of Congress have just received instructions to vote for the ertablishment of an Agricultural Bureau, on a large scale. The Georgia Legislature is about to take the same course.

A lecture on Holland and the Hollanders, has been delivered by Dr. Bethune of New York, at the Smithsonian Institute. It excited great attention, and the Hall was crowded to excess. Other lectures of a scientific character will be delivered weekly during the winter, gratis.

A large number of counterfeit half and quarter dollars are in circulation here. They are composed of bismuth, skilfully plated with silver.

A newly invented carpet bag, which can be used as a life preserver, is for sale here.

A monument has just been completed to the brave Col. Cross, whose remains lie in the Congressional burial ground. He was the first officer who fell in the Mexican War. It is of Italian marble, 13 feet high, in the form of an obelisk.

As soon as Congress shall have organized, so as to leave the Standing Committees at liberty, a resolution will be offered directing the proper Committee relative to compensating passengers on Railroad Cars who may be injured by carelessness of officers. The provisions of the bill will render the remedy comparatively easy, and without the expense of a suit.

A celebrated artist is now engaged in painting a Panoramic View of the Potomac.

This morning I visited the Room of the Cottmmiee on Indian Affairs, where are deposited the specimens brought by the Rev. Mr. Gurley from Liberia. Many of the manufactured articles would do credit to the best mechanics of your city. The specimens of printed books are of the first order, and ought to put to blush the Congressional printing, and printers, whose work is so miserably executed, that it is almost impossible to read it. *

Martin Luther's Wedding Ring.

The Tribune says, we had a day or two since the pleasure of examining a most interesting relic, being nothing less than the wedding ring with which Martin Luther, the great reformer, was married. It is of gold, curiously wought, being broad and flat on the back of the finger, with a small ruby set in the centre. on the inside is this inscription in German: "Dr. Martin Luther, Catherine von Boren, June 13, 1525." The inscription is considerably obscured by wearing. The ring was brought to this country by Charles Luther, a lineal decendant of the reformer, who has abundant proof of its authenticity and of his own in the certificates of the magistrates of the city of Magdeburgh, in Prussia, where he formerly resided, and of former Ministers of Prussia through whose hands it has passed. It was once the property of an ancestor of the present King of Prussia, and by him was restored to the family. The present King, as we are informed, has offered 3,000 thalers, or about $1,800 for it, an offer which was refused by its present possessor, who was last summer forced to emigrate on account of being involved in political disturbances. It is certainly a singular destiny which has brought this valuable relic to the New World.

Croton Aqueduct.

According to the Report of the Croton Aqueduct Department to the Common Council, just printed, it appears that the water rents and new permits granted (759), and all other sources of revenue, since the 19th of July, amount to $137,864 39. The "water-rents," compelling every house to pay for water whether taken or or not, will come into operation on the 1st of May. The sum of $10,000 has been appropriated in making out the assessments, which are not yet completed. The growth of the city has increased the expense of the department, by the laying of new pipes, and it is expected that that expense will amount annually, for years to come to at least $100,000. Upon the waste of water the report speaks strongly, stating that nearly the whole volume of the Croton River has been delivered during the summer months, or 60 gallons for each inhabitant for every 24 hours—more than three times the quantity required for any legitimate purpose.

Deaths in New York, in 1849.

The number of deaths for the year ending Dec. 31, 1849, was 3,052; of which 1,503 were males, and 1,546 females: 1,440 were adults, and 1,612 were children. Excess of mortality in 1849 over 1848, 957. The great excess in the number of deaths is owing to the Cholera, of which there were 650 fatal cases, and of these 500 were adults and 150 children. The population of Brooklyn is 100,000. The rate of death to population is 1 to 33, or 3 per cent. Deducting the mortality caused by the epidemic, leaves the rate of 1 to 42 inhabitants.

"My son," said an old turbaned Turk one day, taking his child by the hand, in the streets of Cairo, and pointing out to him on the opposite side a Frenchman, just imported in all the elegance of Parisian costume,—"my son, look there! if you ever forget God and the prophet, you may come to look like that?"

The Grand Jury in Boston, has brought in a true bill against Prof. Webster for the murder of Dr. Parkman. The Professor appeared to suffer nothing by his confinement.

Speaking of the students at the London Hospitals wearing moustaches, says they are useful in pointing out the vainest, idlest and most conceited in the class.

A clock faced indicator, to express the force of the pressure of the steam in a boiler, has been invented and patented in England.—[Ex.

[Old news.

The City Council of Quebec, have passed a resolution pledging the credit of the city of the amount of $500,000, for the completion of the Melbourne Railroad.

Receipt for Making a Cheap and Valuable Composition for Washing Clothes.

Take 1 pint of alcohol, into which put as much gum camphor as it will dissolve, and add half a pint of spirits of turpentine. Mix 4 table spoonsful of this liquid with one quart of soft soap—stir well together, and with this make a warm suds. After having soaped the clothes put them into it and let them remain 20 minutes, then work them up and down a few times, so as to rinse them. Wring them out and soap them again. Put them into cold water, and let them remain 15 minutes. The clothes must then be boiled in the same water a few minutes, after which they have only to be sudsed and rinsed.

The foregoing receipt has been peddled through the country, and selling for one dollar. We give the receipt gratis, and with it a caution, that notwithstanding it is a great saving of labor, and answers well in some cases, yet with repeated use, the clothes do not look so clear and white as when washed the ordinary way.

[The above is from the Ohio Cultivator, and it consistently adds a caution in its use. This is right: there is no better way of exposing quack receipts than by giving them and telling their defects. Now let us tell the scientific defects of this receipt. Camphor and alcohol make a varnish, and it does as much good in washing the clothes as to put some varnish on them for the purpose of taking it out. It does not save a particle of labor—not a particle.

Best Pale Carriage Varnish.

8lbs. second sorted African copal; 2½ gallons of clarified oil. Boiled till very stringy, 0¼lb. of dried copperas; 0¼lb. of litharge; 5½ gallons of turpentine; strained and mixed. Then boil 8lbs of second sorted gum amine; 2½ gallons of clarified oil; 0¼lb. dried sugar of lead; 0¼lb of litharge, and 5½ gallons of turpentine, mix this to the first while hot. This varnish will dry hard, if well boiled, in four hours in summer; and in six in winter. As the name denotes, it is intended for the varnishing of the wheels, springs, and other similar parts of coaches, &c.,; also it is that description of varnish which is generally sold to, and used by, house-painters, decorators, &c., as from its drying quality and strong gloss, it suits their general purposes well.

Extraordinary Escape from Death.

The following strange story is related in the Baton Rouge Gazette (Extra) of the 8th inst.: A very singular or rather very extraordinary escape from death occurred to one of the deck hands of the Magnolia on her last trip up from New Orleans. The man alluded to was sitting on the bow of the boat asleep, when he fell overboard and slipped under the boat. The next instant he was picked up by the paddle of the wheel, and safely, and without injury, deposited in the wheel-house. So sudden was all this done that he woke up very much astonished at the cold bath he had undergone, but entirely ignorant, until informed of the curious revolution and fearful escape from death through which he had passed.

[The above is one of the most wonderful feats performed by a steamboat that we have ever heard of. Lardner compares the steam engine to the trunk of an elephant: verily, so might the paddle-wheel of the steamboat Magnolia,—if all is true; but of which there are strong reasons for supposing that the man slept—he dreamed—he awakened and found it was a dream.]

Veto Statistics.

The veto power has been exercised twenty-five times, since the organization of the government, viz: by Washington 2; Madison 6; Monroe 1; Jackson 9; Tyler 4; Polk 3. Total number of vetoes, 25. The whole number of acts passed and approved since the origin of the government, is about 7000—which will make 280 acts for one veto.

Laws are generally found to be nets of such a texture, as the little creep through, the great break through, and the middle size are entangled in.

We have a number of communications on hand, to which we shall give our attention next week.

Scientific Memoranda.

GAS—ITS HEALTHFUL EMPLOYMENT.

It is stated on respectable authority, that in many Gas Manufactories of England, no cases of cholera had occurred among the operatives, even while the disease was raging fearfully around them.

SULPHUROUS ACID CRYSTALS.

M. Depping states, that if sulphurous acid gas, (previously washed to deprive it of sulphuric acid) be passed into a flask of distilled water surrounded with ice, a crystalized body is formed when the water has absorbed a sufficient quantity of the sulphurous acid. At a temperature a little above that of melting ice, these crystals dissolve again, but if the liquor be brought below the freezing point, the crystals form anew, the masses of cubes heaped one upon the other.

Whaling Business.

The Boston Transcript says, that sinee the opening of the California trade to the commerce of the world, the whaling bnsiness has fallen off. The article of oil has steadily advanced in price for the last year, and the tendency is still upwards. On the 1st of January, 1850, there were but 3,760 bbls. of sperm, and 1,300 of whale oil in the United States in first hands, a smaller quantity than during any previous year since 1845. Sperm is firm at 118 a 119, and whale quick at 48.

The whale fleet on the 1st of January, 1850, consisted of 510 ship and barks, 20 brigs, and 13 schooners, being a diminution of 71 ships and 1 brig, and a total of tonnage of 24,626 tons. These vessels have nearly all of them gone to California with gold hunters.

Striking Comparison.

The following beautiful comparison was made by Rev. Henry Ward Beecher, in the course of his sermon at Boston recently:—"When the chain of the surveyor strikes the oak in the forest, he is followed by the woodman with his axe, who pauses ere he gives the blow. He beholds the noble tree, which has stood for a century, with its branches spreading far and wide, and yielding a grateful shade. He looks not upon it in admiration, but sighs and exclaims: 'Ah! how long will it take me to cut it down?' And so in party strife men behold in their way a nobleman of humanity, they pause not in admiration, but exclaim: 'How soon can we cut him down?.'"

Banker's Magazine.

January number, by J. S. Homans, Esq., No. 111 Washington street, Boston: contains several valuable papers which are of much interest, viz:—The Treasury Report, Bank Decisions, Interest, and repeal of the Usury Laws; State Finances, Chronicles and Characters of the London Stock Exchange; Revenue, etc., of Boston; Expenditures, etc., of New York city; Gold Mines of Liberia, California, &c.

We perceive that the publication of this Journal has been removed from Baltimore to Boston. Terms $5.00 per annum—monthly.

There is great fault found in this city, with the New York Gas Company. If Mr. Paine was now to arrive here with his Electric Light, he would be hailed as a deliverer from the bondage of carburetted hydrogen.

Snow as it falls, is twenty-four times lighter than water, which may be proved by melting twenty-four measures of snow, and they will be found to produce but one of water.

The Report of the Croton Aqueduct Commissioners, gives one striking fact, to wit: that every person in New York, averaging the Croton used by our population, uses 60 gallons of water daily.

A committee has been appointed in one branch of the New York Legislature to inquire into the property of enacting a law to prevent interments in cities and crowded populations throughout the State.

The citizens of Eastern Shore, Maryland, ask for cannon and muskets to use against the oystermen of other States, who visit their waters without leave or license.

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For the Scientific American.

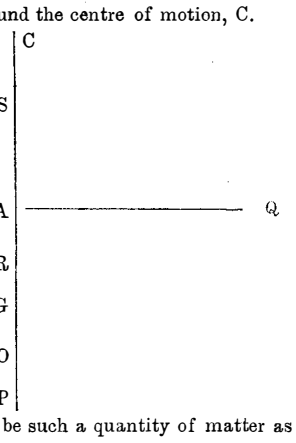
Centre of Gyration of Water Wheels.

This general problem was proposed in your paper some time since for some of your readers to solve. As none have seen fit to take it up, we will propose the following general solution.

We will first give the mode by which the centre of Gyration of revolving bodies is found.

—If a body revolves around an axis, the particles of which that body is composed resist, by their inertia, the communication of motion to any given point, with forces which are as the particles themselves and the square of their distances from the axis of motion, jointly.

Let a force, Q, be applied at any point, A, (in the accompanying figure) in order to communicate motion to a system of particles, p p' p'', &c., revolving at a determinate distance round the centre of motion, C.



Let A be such a quantity of matter as will if concentrated in A, have the same effect in resisting the communication of motion to that point by its inertia, when any particle, p, is removed from the situation P, as that particle would have revolving at the distance P C.—Now the effect of the given force, Q, acting at the point A (in a direction Q A, perpendicular to C A) to move a body at that point, is to its effect, to move a body at P, inversely as their distances, or as P C to A C, by the nature of the lever, and if these bodies be moved with equal angular velocities, their distances from the axis being then as the spaces described in a given time, the moving forces are inversely as the spaces described—but taking for a moment the notation that

$$F \mathcal{S} \frac{Bv^2}{s} \text{ or } Fs \mathcal{S} Bv^2$$

in which if $F \mathcal{S} \frac{1}{s}$ then will $B \mathcal{S} \frac{1}{v^2}$ consequently the quantities of matter must be inversely as the square of the distance from the axles—that is $A : p :: PC^2 : AC^2$: whence we have $A = p\frac{PC^2}{AC^2}$ which indicates that the resistance of the particles p, at the distance P C is equivalent to the resistance of the mass $\frac{p \times P}{AC^2}$A the distance A S. In like manner, taking another particle, p', at the distance P C, and a corresponding quantity of matter, A', concentrated into the same point, A, we shall have the resistance of the particles p', at its distance equal to the resistance of the mass $\frac{p' \times P'C^2}{AC^2}$ at the distance A C, and the same may be shown of the particles p'' p''', &c.—consequently if we use the character $\mathcal{S}$ to denote the whole fluent, or sum of all the separate resistances, we shall have the resistance of the whole revolving body expressed by $\mathcal{S}\frac{p \times PC^2}{AC^2}$

The force which accelerates the point A of any body revolving on an axis, to which point that force, Q, is applied, is equal to the product of the force into the square of the distance A C, divided by the sum of the product of all the moleculæ into the square of all their respective distances, from C the centre of motion.

For the mass moved has been shown to be $\mathcal{S}\frac{p \times CP}{AC^2}$ and the moving force is Q, but the accelerating force is equivalent to the quotient of the moving force by the mass, and is therefore represented by $\mathcal{S}\frac{QAC^2}{p \times PC^2}$ The angular velocity of a system generated in a given time by any force, Q, at A, perpendicular to A C, is proportional to the rectangle of the force into the distance at which it acts, divided by the sums of the product of all the moleculæ into the square of their respective distances. For the absolute velocity of the point A is as the accelerating force; and the angular velocity is as the absolute velocity directly, and the distance reciprocally, therefore the angular velocity is as $\mathcal{S}\frac{Q \times AC^2}{p \times PC^2} \times \frac{}{AC}$ or as $QAC \div \mathcal{S} p = PC^2$

Again—If the sum of the products formed by multiplying each particle of a system into the square of its distance from the axis of motion, that is if the momentum of inertia be divided by the whole mass, the square root of the quotient will be the distance of the centre of Gyration from the axis of motion.

For if C R be the distance from the axis of motion to the centre of Gyration, the expression of the angular motion

$\frac{Q \times AC}{\mathcal{S} p \times PC^2}$ or $\frac{QAC}{\mathcal{S} pr^2}$ will be transformed to $\frac{QAC}{B \times CR^2}$ and these, by the condition of the proposition must be equal—and consequently $B \times CR = \mathcal{S} pr^2$, and $CR = \sqrt{\frac{\mathcal{S} pr^2}{B}}$

Now let C P=l revolving on the point C, to find its centre of Gyration; let any variable distance C A=x; now by referring to previous formulas, we have $\sqrt{\frac{\mathcal{S} pr^2}{B}}$ becomes $\sqrt{\frac{\mathcal{S} x^2 x}{l}} = \sqrt{x^3}$ —and thus where $x=l$ gives C R=$\sqrt{3l}$ $\sqrt{\frac{1}{3}l^2} = l\sqrt{\frac{1}{3}} = .57735l$.

To determine the centre of Gyration of a circle or a circular wheel of uniform thickness, let n=3.1416, and r the radius of the circle—then is nr^2=the area of the circle, its fluxions is $2nrr'$ and their force $\mathcal{S} pr^2 = \mathcal{S} 2nr^3r'$, consequently $\mathcal{S}\frac{Pr^2}{B} = \mathcal{S}\frac{2nr^3r'}{2nr'r} = r\sqrt{\frac{1}{2}} = \frac{1}{2}r\sqrt{2} =$ .707107r=CR, that is, the distance from C, the centre of the circle, to R, the centre of Gyration.

The foregoing is the mode of ascertaining the Centre of Gyration of a revolving body. By referring to the early part of the investigation it will be noticed that it is taken for granted that $F \mathcal{S} \frac{B}{s} v^2$ when F=the force constantly acting upon the mass B, and V=the velocity of the body, S=the whole space described. Now these relations never take place unless we take the notations for a moment, in which case the motion of the revolving body must be instantly checked or stopped, a condition that never takes place in the operation of the common water wheel—hence this principle must always remain dormant, or (if the term may be allowed) latent in the operation of the common water wheel, and therefore it cannot make any difference at what part in the radius of the wheel the power is taken off, so far as regards the possibility of conflicting with the principles of Gyration.

This was quite a celebrated problem when it was first discovered, and in order that it should have some practical application in mechanics (a condition in these times thought all important) its principles were applied to the water wheel.

If this question was not so purely theoretical, or if it had any practical application, we could carry our investigation much farther and show that a force cannot vary—as the weight multiplied into the square of the velocity divided by the whole space passed over, in—any condition whatever; that is, to show that $F \mathcal{S} \frac{Bv^2}{s}$ is a condition which cannot possibly take place. The result of this investigation would show that even the old mode of ascertaining the Centre of Gyration, or the imaginary point, was wrong.

C. E. L.

Matteawan, N. Y.

Dead Power Points.

The so-called "Dead Power Points" of the Crank, have for years past and still continue to be the "points" first assailed by every venturous knight in the field of Mechanical Science. Scarcely a month passes that your paper does not furnish an account of still another vanquished hero, who, having shivered his lance and battered his shield against these invulnerable "points," falls at last a martyr to an imaginary "dead power." They remind me of men fighting shadows on the wall, while in a moment the shadow flies onward with the substance.

It is indeed a little singular that it does not occur to the mind of every original thinker, that this phenomenon of "dead power points," is one of the great indispensables, constituting as it does, one of the fundamental laws of matter, and must continue to exist so long as rotary motion is dependant on two or more forces; so long as matter is tangible it must be evident to every one: I would as soon expect to see a ball round and flat at the same moment—an elevation without a corresponding depression—a hill without a valley.

Let it be borne in mind that when two or more forces have conspired to produce one half a circle towards rotary motion, they have accomplished their utmost, they have reached the *ultimatum* of all power, they have gone half around the globe; and having accomplished this much, the same forces acting in a contrary though parallel direction, soon arrive at the point from which they started, and thus complete the circle. When this is done, all is done. The earth in its revolution around the sun can do no more. A man turning at a crank is everywhere meeting with, and everywhere overcoming these "dead power points," their imperceptibility in this case arises from the fact that the power is everywhere changing. Were the power confined to four directions, these "points" would become more perceptible, and the difficulty of overcoming them would increase in the ratio of their diminution, and would be greatest when their number would be reduced to two. But even then, there would be no power lost, since at these "points" none would be necessary, because the power in reaching a "point" has completed half a circle towards rotary motion and arrived at its *ultimatum*, and has only to perform in a similar manner to complete the circle. A vessel moving through the water has her "dead power points," at her extreme breadth and depth, while her prow and stern may be said to be those of the least resistance. The earth, in revolving around the sun, has its "dead power points" at the equator—at the poles those of the least resistance. The same may be said of the bird, the fish, the race horse, the shuttle, the egg, &c. And in all forms, both natural and artificial, where motion is desired with the least resistance. The projectors of our Flying Machines, in endeavoring to dispense with these "points," have whittled down the extremities of their cigar-shaped float, almost to nothing—but it must be to nothing before they can accomplish it. The absence of these "points," in connection with matter, cannot be imagined, much less exemplified. And as has been truly remarked by a writer in your paper of the 8th inst., "the exchanging of the crank for any other medium of transferring reciprocating into rotary motion, is one of the mechanical fallacies of the day." The bare fact that it resembles in its operation, closer than any other means, the action of the human arm, is sufficient to stamp it as the *ne plus ultra*, in its way, of mechanical ingenuity.

CHAS. GRENNELL.

Marion, Ala., Dec. 17th, 1849.

The Use of Hogs.

The fat of hogs, is only good as an article of food, to keep up the heat of the body. In warm weather, the lean alone should be used. Well mixed pork is good food, but it is by no means equal to good beef, but in raising animals for food or otherwise, the hog is an animal of some consequence, and more so, since improvements in the arts, have opened up a way to make his porkship subservient, to the most useful purposes of illumination, in the shape of oil, and hog tallow, (stearin.) America may be called the country of hogs, for probably the number of old and young annually slaughtered in this country, probably does not fall below 10,000,000, worth in market an average of at least $5 each, giving us an annual return of $50,000,000.

The flesh of swine furnishes more than half the meat consumed by the laboring portion of the Union, including those employed in the military and marine service, and our merchant vessels. Hogs that are fattened without being stall-fed, make the best food, but produce less lard, and those that raise them should feed and use them for the separate purposes of food, or for lard. Large quantities of it are converted into lard and oil. This is done not only with the more exclusively fatty portion of the meat, but frequently the whole carcass is placed in a steam bath, and all the oily particles are extracted.

The lard may be subjected to a pressure which separates it into two substances, widely differing from each other, one being a pure oil, limpid in all weather, and known as olein; the other, a compact substance resembling the best mutton tallow, and melting only when exposed to considerable heat. Both are equally suited to the purpose of illumination, the former in lamps, the latter as candles. Extensive use is made of the oil for machinery, and none is found (from its purity and freedom of gumminess) to answer a better purpose by lessening friction.

Mr. Campbell Morfitt, Phila., was the first to discover and publish the method of making the lard into oil and tallow. The discovery was a valuable one to the United States, and has contributed greatly to its industrial and productive wealth.

Egyptian Fortification.

Colonel Wilkinson, an English Archæologist, in a late paper read by him in London, gives an interesting account of the building of Egyptian fortifications, from 1000 to 2000 years before the Christian Era. The system of Egyptian fortifications is chiefly exemplified in the defencess at Samneh, which are two fortifications of peculiar construction, part of a line of each erected in very early times, to defend the frontier against the Ethiopians, and to serve the Egyptians as a base of operations in their advances towards the south. The forts begin about the lower extremities of the cataracts, the principal ones being accompanied by others of smaller dimensions, placed in some instances, on islands in the river. Some of the larger fortresses are also met with in Egypt and Nubia; the most remarkable being at Contra Pselcis, at Hieropolis, at Abydos, and El Haybeh. The general character of them all is similar, and presents some of the peculiarities of modern works, in the glacis, scarps and counterscarps, and what may be considered ravelins in the ditches. If the ground permitted, the fortress was square, with one, and occasionally two, main entrances—generally with one—and a sally port, or water gate, if near the river. The material of construction was crude brick, a most durable substance in the dry climate of Egypt. The system of fortifictaion above described, prevailed as early as the twelfth and thirteenth dynasties, but was afterwards abandoned for what was, to the Egyptians, a more convenient mode of defence—that of fortified temples; and this method, according to which forts were multiplied in the towns in the same proportion as temples, was unanimously adopted after the accessions of the eighteenth dynasty.

Indiana River and Harbor Improvements.

A preamble and resolutions, introduced into the Indiana House of Representatives by Mr. Wright, from Ohio and Switzerland counties—the former declaring the rivers and harbors of the west national in character, and entitled to the fostering care of the General Government, and the latter instructing the Senators and requesting the representatives in Congress from that State to "use all exertions and influnce to procure the passage of a bill making appropriations" for the improvement of their channels and harbors—were indefinitely postponed.

It is better to be acquainted with the history of your own country, than with that of Athens or Sparta. The time is coming when a man may hold his head up amongst the learned without receiving a classical education.

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New Inventions.

New Vulcanized India Rubber Cloth.

A new kind of Vulcanized India Rubber Cloth has been introduced into our city, and was noticed in the Tribune of last Saturday, as "a discovery of great importance just made in England will now, however, put an end to the whole dispute and render all existing patents in this country worthless, by introducing an entirely new process, which is the invention of a Mr. Burke, is more simple and cheap than the old one, dispenses with the use of Sulphur altogether, and avoids the unpleasant smell always caused by that substance. Though patented in England, it has already been used by some of our own manufacturers and cannot now be monopolized in the United States. It will therefore throw open the business to free competition, and greatly increase the manufacture of India Rubber if not enhance the price of the raw material.

The discovery may be succinctly described as follows. We condense from the language of the inventor:

Mix 15 parts of Golden Sulphuret of Antimony with 100 parts of India Rubber and when it is thoroughly "masticated" as known to manufacturers, the articles are to be made up and then submitted to heat in a boiler under pressure at a temperature, varying from 260° to 280° Farenheit.

A manufacturer of this city, (says the Tribune) has shown us specimens made by mixing a much larger portion of Golden Sulphuret of Antimony with the same quantity of rubber named above. The product is exceedingly elastic, tough and beautiful in appearance, while it is perfectly free from the smell of Sulphur. At the same time it has no appearance of Bloom, which is a point of the first importance.

The heating of compounds of rubber in a boiler under pressure was first introduced from England into the United States some three years ago. Since then the manufacture of rubber goods has more than doubled in amount. This new discovery by which Antimony takes the place of Sulphur will extend still further this branch of American industry, than which none has received more attention from scientific men."

This invention was noticed in the Scientific American of the 8th Dec., 1849, page 92.—We believe that it is a great improvement over the old way, but it is our humble opinion that Sulphur, in any shape, should be considered an infringement of the first American Patent.—Take away the Antimony, and what is the invention but Sulphur, and that would make Vulcanized India Rubber; but take away the Sulphur in any shape, and would the India Rubber become what is termed vulcanized?—No. While we denounce the foreign piracy of American Inventions, we must pluck the moat out of our own eye, and denounce the piracy of foreign inventions, especially when designed to circumvent patents that are now in existence here.

New Kind of Packing--Surcharged Steam.

Messrs. Editors—I noticed in your paper of the 5th inst., that a patent was granted to Wm. Crofton, "for tubular packing for pistons and stuffing boxes." This doubtless refers to a patent, which was forwarded from England, through me, to the patent office, on behalf of William Crofton Moat.

I should be pleased to show you a specimen of this beautiful invention, as also to any of your readers who may feel an interest in such matters. Allow me to observe, that this packing has been tested and approved of in England, in one of the locomotives of the Liverpool and Manchester Railway. Yours, most respectfully, Thos. Prosser.

28 Platt st.

N. B.—I am surprised that the surcharged steam delusion of Mr. Frost was not more fairly met by the Boston savans. The thing is old and obsolete, and was the subject of patents granted in England to Dr. Haycroft. See Repertory of Patent inventions, Vol. 13 (1831) page 25.

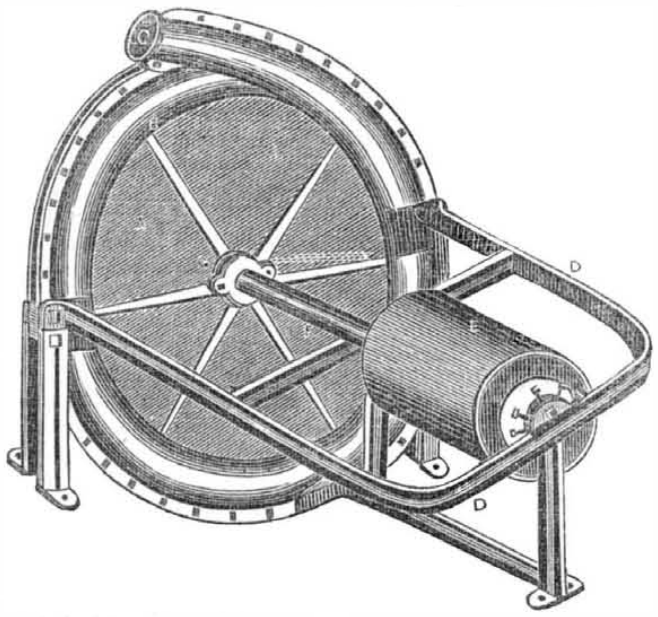
Dickson's Process of Making Iron.

The Jerseyman gives the following description of the new process of making iron recently invented by Mr. Alexander Dickson, of Newark.

"The fire is placed at the end, under a horizontal bed of fire-brick some twelve or fifteen feet in length—the fire passing through to the other extremity. In the centre, and over the bed, is erected a double cylinder, which is filled with crushed ore and pulverized anthracite coal. The intense flame surrounds the cylinder, and also passes through the centre by the inner cylinder, which eradicates the oxygen and all others impurities with the presence of atmospheric air. Being thus prepared, the ore gradually melts and descends to the hearth, where it first comes in contact with the fire, which destroys the remainder of the pulverized coal by frequent stirring, and the iron is thus partially formed. From this hearth it is thrown to another about eight inches lower than the first, where it is worked into balls of about one hundred pounds amid the same sheet of fire, and in a few minutes the ball is withdrawn and put under the hammer to put it in shape, which concludes the process.

VON SCHMIDT'S CENTRIFUGAL PUMP.

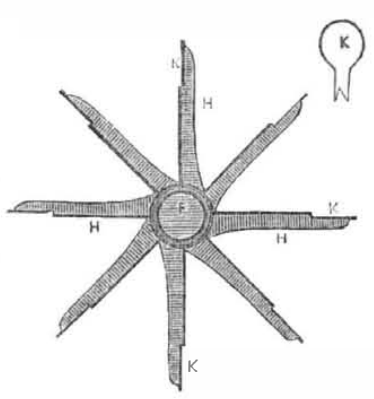
Figure 1.



This is the great patented centrifugal pump invented by Mr. Schmidt of this city. Fig 1 is a perspective view, and Fig. 2 is side view of the revolving arm and blades.

There are two circular flanges which are bolted together and form a hollow ring, B; with the sides, A, like two discs bolted together, forming a hollow chamber within, and having a wide circular circumferential chamber (hollow ring). C is an orifice of discharge; to which a pipe may be attached, and a pipe for a lower orifice on the other side communicates, air tight, with the water in the well, or other place. F is the shaft, running through the pump, and A is a stuffing box to render it air-tight when it passes into and out of the circular chamber, E, is a large pully which by a band from any power revolves the arms inside to raise and force the water. D is the frame of the machine.

Fig. 2.



F is the shaft; H H are the arms fixed firmly on a collar around the shaft inside; K K represent the ends or blades of the arms; a side view of one being given. These blades run in the circumference or hollow ring, B, and the arms revolve between the two sides, A A. The blades are not stuffed nor fitted to run stiffly in the hollow ring, a thing common to other rotary pumps, and which causes much friction, a rapid wear of rubbing surface, and hence consigns them to an early tomb. It is, on the other hand, fitted to run with ease, like a blower; so that its passages do not get clogged up, and sand, gravel, &c., do not injure it. It requires no inside packing; all the parts are simple, easily cast and put together. Mr. Daniel Burr, of No. 70 Pine street, New York, is prepared to furnish these kinds of Pumps, of any size desired, from one capable of discharging from 5 gallons to 5000 gallons of water per minute! with Suction Pipe of wrought or cast iron, copper or lead; or flexible pipe of leather or india rubber; also Discharge Pipe of iron, copper or lead, and hose of leather, india rubber or gutta percha. He is also prepared to sell patent rights. It is both a Suction and Force Pump; and may be used as a Fire Engine by simply attaching hose to the discharge-pipe: By increasing the power, the quantity of water discharged will increase proportionately. Its movement being rotary, this increase may be indefinite; or up to the point of velocity with which water will fill a vacuum—the maximum of the efficiency of any pump. It has been adopted by the United States Government in the construction of the Water Battery on Staten Island, harbor of New York, and at the extensive fortifications now in progress on the Tortugas Keys, Florida, and it is usefulfor almost every hydraulic purpose.

Shoe Lasts.

The manufacturers of shoe lasts, under Mr. T. Blanchard's patent, have petitioned Congress for protection against what is said to be a violation of their patent rights: lasts being made in Canada and imported into the United States. We really do not see how Congress can touch this question. It is unfortunate to be sure, but our Patent Laws do not extend over Canada, nor do British patents extend over the United States. A patent on a machine does not cover the manufactured article, but that which makes—manufactures. There is no way to reach a case of this kind, but by imposing a prohibitory duty on foreign manufactured lasts—no other law would be constitutional, in our opinion.

Wire Work Fire Proof Ceilings.

Fire proof ceilings of wire work have been successfully applied, in place of lath, with plaster and stucco as usual, at the Chester Lunatic Asylum. The wires are about ¼ inch apart, and the plaster forms an adhesive and serviceable mass, even on both sides. The wire is japanned to prevent corrosion. Not only ceilings, one would think, but thin partitons and walls in general, might be wired in place of lathed, and risk of fire thus greatly diminished by a process neither patented nor costly.

Experiment on Remington's Model of a Bridge.

A correspondent of the Mobile Advertiser, from Montgomery, describes an experiment made at that place to test the strength of one of Remington's model bridges. For the purpose, a bridge was prepared sixty feet long.—The floor was supported by 3 stringers of yellow pine. The size of these three stringers was one and three quarter inches each at the abutments and exactly one inch square each at the centre. Upon these three stringers (which were made of pieces of plank, or strips joined together, so as to produce strips of the required length) a floor was laid, consisting of two courses of rough plank, crossing the bridge diagonally in opposite directions, and nailed together. The whole bridge was about two feet wide. The weight put upon it consisted of pigs of iron, previously weighed. When the iron was put on it, the floor began to sink in the middle, caused by the abutments at each extremity yielding inwards—they had not been made sufficiently stiff. Tney gradually yielded as the bridge was loaded, till the centre of the bridge sunk at least two and a half feet below the horizontal line. When the weight reached 29,000 lbs. the three string pieces snapped assunder, at the centre, where they were each one inch square. At the centre there was no joint or splice in the stringer—it was the natural wood one inch square, it was thus shown that three pieces each one inch square, of yellow pine bore weight until it reached 29,000 pounds. It was not a favorable trial, from the defect mentioned; but it was clear that the strength thus surprisingly developed is more than is necessary for bridge building.

An American Churn in England.

Mr. C. J. Anthony, of Pittsburgh, Pa., has taken out a patent in England for his atmospheric churn. His churn consists in principle of having the dashers of the churn made with cavities in them, so disposed and arranged as to force air into the milk, partly by compression and partly by suction, or by compression or suction singly.

Chemistry of the Stars.

This singular head forms the subject of an article in the British Quarterly. The design of it is to show that the forms of life existing in this world are not repeated in the other planets and heavenly bodies. The article is destined to be read with unusual interest. The data from which it reasons, are the variety in weight, superficial phenomena, forms and color of the heavenly bodies. It is shown to be impossible that a system of animal and vegetable life, resembling that of our globe, can exist on many of them. The dry and rugged surface of the moon, volcanic, yet without sea and without atmosphere, the varying quality of sideral light, and the chemical property of meteorites or air stones, so far as their component substances have been discovered by analysis, are among the data on which it is argued that the stars are not *telluric*, that they do not resemble the earth in their composition, and, therefore, that life must be otherwise associated and sustained on the surface of those orbs, if it exist at all, than on ours.

New Steam Boiler.

Mr. R. E. Dibble of Rochester has invented a new steam boiler which has considerable claims upon the attention of engineers.

The outside of the boiler is composed of sections or apartments for water, each communicating with the other by tubes, through which the water circulates. These sections are so constructed that the boilder can be taken to pieces for transportation or for repairs, and be readily joined together.

The interor contains a large number of tubes each forming a curve or angle, and its upper end opening into the steam chamber at the top of the boiler, while the lower end of each pipe opens into the water-box or reservoir surrounding the boiler and from which the pipes are supplied with water.

The fire grate is placed in the interior of the boiler, directly under the tubes.

The Catholics in England now have 674 chapels, 880 priests, 13 monasteries, 41 convents, 11 colleges, and 250 schools.

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Scientific American

NEW YORK, JANUARY 26, 1850.

Patent Office Report.

Commissioner Ewbank has presented his report for 1849. As he has not been in office during the whole of that period, it embraces both the transactions of the office when under Ex-Commissioner Burke, as well as under the present Commissioner. This report differs from every other that has been presented. It is certainly original in a number of points, and is devoted to the right subject.

Heretofore, the Agricultural Report was always the first and most prominent object, but this is not the case with the present one; it engages at once in the objects for which the Patent office was intended. It is divided into eight heads, as follows:

1. Finances and Statistics of the Patent Office. 2. Inventions and Claims. 3. Examiners' and Machinists' Reports. 4. Origin and Progress of Invention. 5. THE MOTORS—Chief Levers of Civilization. 6. Proposed Application of the Patent Fund; I. Publication of Specifications; II. General Index of Inventions; III. Institution of National Prizes. 7. Historical Notices of Inventions—from archives of the States, &c. 8. On the Propulsion of Steamers.

He comes out vigorously in defence of the rights of inventors, and remonstrates on their behalf against the diversion of the patent fund applied to the construction of public buildings for miscellaneous uses. Fifty thousand dollars were thus taken last year from the Patent Fund (reducing it by so much from the $216,469 on hand on the first of January, '48,) for the completion of the building called the Patent Office, but actually devoted to a variety of public uses, and will cost Half a Million more, absorbing the whole fund now existing and all that may be realized for many years to come. He protests against this, and urges the restoration of past abstractions and the consecration of the entire fund henceforth to the encouragement and facilitation of the efforts of Inventors.—To this end he proposes, 1st, a regular annual publication of the Specifications and Drawings of all new inventions; 2d, the publication of a General Analytical and Descriptive Index of Inventions, at an estimated cost of $6,000;—3d, The INSTITUTION OF NATIONAL PREMIUMS FOR NEW DISCOVERIES of transcendent value and enduring beneficence.

In regard to the *Inventors' Fund*, he says:—"Under the conviction that Congress will not deny to the class of citizens from whom the Patent Fund has been received, the accomplishment of their wishes, and believing that the following proposition will meet the approbation of the wise and good of all classes, and be consistent with sound policy, the undersigned suggests that ONE HUNDRED THOUSAND DOLLARS of the Patent Fund be held sacred and intact as a permanent Inventors' Premium Fund: from the interest of which, rewards in money may be distributed once every four years, for the most important additions to science and the useful arts."

At seven per cent, the interest on this fund would amount to more than $28,000 every 4 years, a very handsome sum to encourage inventions. He suggests one premium "of $10,000 for an invention whereby land can be worked without animals; one of $20,000 for the first steamship or other vessel that makes three consecutive trips across the Atlantic at an average speed of not less than twenty miles per hour; one of $20,000 for the first vessel that does the same at an average speed of not less than twenty-five miles per hour, and one of $100,000 for the first person who within —— years shall render ELECTRICITY available as an economical, efficient and general prime-mover; or who shall within the prescribed period discover and make known the means by which ATMOSPHERIC PRESSURE can be profitably employed in the propulsion of sea-going vessels and land locomotives, or as a general propeller of fixed machinery, by some rapid mode of expelling air from a cylinder or annihilating it under a piston; Or who developes an *Explosive* or other prime mover, applicable, energetic and economical as the vapor of water, and whose exciting and transmuting mechanism is less massive and costly than that of the steam engine."

A number of Patents have been taken out in England for locomotive plows, and a number have been tried, but all have failed. We do not know that if a locomotive plow would be of any benefit to a farmer—we think not, and have had some experience in that line in our younger days. We coincide with the recommendation of the other two premiums, for improvements in steam-ships, but we do not in the one of $100,000 for discovery in Electricity. There is no science which has brought forward more quacks than that of Electricity. It will take the practical operation for ten years, of any new power, to compare its whole economical value with that of steam. No less than $30,000 was voted by last Congress to Professor Page, of the Patent Office, to make experiments in Electro Magnetism as a substitute for steam power. We know not what the result is, but presume that no new facts adequate to the amount expended, have been elicited. We would advocate to the fullest extent, the bestowment of premiums for discoveries, but we would like to be cautious on this point. We are afraid that if arrayed into a system, it will become a black pension fund—a source of corruption—a carcass for hungry but favored vultures to feast upon; and the powers above know, that we have enough of national sins of that kind to sponge out already.

The British Government at one time offered premiums for certain discoveries, and among the rest, (standing yet, we suppose) was one for "perpetual motion;" and some of the premiums awarded were worthily bestowed, while others were not. Bertholet relates the case of Dr. Berkenhout, who was awarded, in 1715, a premium of £5000 (a great sum at that time, equal to $40,000 at the present day,) for a discovery that proved to be utterly worthless. Such things might happen again, in spite of the greatest care, and under the direction of the wisest savans. We cannot forget worthy Tom White, of the Guardian, who, after he had been for a long time employed to discover the "philosopher's stone," penned the famous epistle, "I know as little about the philosopher's stone as you do. I shall only tell you for your comfort, that I never yet could bubble a blockhead out of his money. They must be men of wit and parts who are for my purpose."

We are heartily glad to see Mr. Ewbank recommend the application of the Patent Fund for the printing and dissemination of all useful information relating to patents—this we consider to be the first thing that should be attended to; it is certainly a move in the right direction.

As extracts only of this Report have been printed, we hope to be able to publish the whole of it, when it is printed, for it is a great and able document.

Discovery in Africa.

The South African Commercial Advertiser contains a letter from Robert Moffat, the famous Scotch Missionary and traveller, giving a description of a great lake which he has discovered, after a journey of 556 miles into the interior. It is very broad; two large rivers run into it from the North. It is full of the finest of fish, and the banks clad with a peaceful and primitive people, having the general types of the African race.

A River Spring in the Wilderness.

Major Emory, writing to Washington, confirms former reports about a river having suddenly appeared in the desert on the Gila route to California. The letter states that parties which went by the route before the 4th of last July, suffered much from thirst, while those which passed since that time encountered the river. It crosses the route about midway of the desert.

Dr. Gay, the celebrated chemist in Boston, has gone the way of all the earth. His death was sudden, supposed to be caused by some deleterious gas, drugs, or other substance used in some of his experiments.

Works on Science and Art.

Under this head it is our intention to give, some times, brief reviews of works which we consider necessary to form a part of the Library of the Mechanic, Artist, Agriculturist and lover of science. We do this at the request of many subscribers, who have been solicitous to know what kind of books would be most useful to them, and where to find them. We will always mention the price, (if we can) and the place where they can be found, so that those who may want them can send by post and purchase. Our object, we think, will prove both acceptable and of great benefit to all our readers.

THE AMERICAN HOUSE CARPENTER.—This is a book of 300 pages, illustrated with more than 300 very good wood engravings. The first part of it is a treatise of 62 pages on Practical Geometry. There are innumerable treaties extant on this subject, but none that we have seen equal to this for practical purposes to the majority of carpenters, because it gives a very clear dissection of the principles, and many useful problems, resolved by common arithmetic.

The next part is on the principles of architecture, explaining the different orders, giving rule and figure demonstrations of them all.

The next and largest part, is the practical detail—the instructive of the trade. It explains the way to form mouldings, cornices, &c., also the construction of bridges and all the separate parts of buildings, such as framing, stairs, &c., and concludes with an excellent treatise on drawing, lights and shadows. The real good qualities of this book consist in its simple clearness. The author is R. G. Hatfield, and it is published by John Wiley, No. 161 Broadway, N. Y. The price is $2,25.

WIGHTWICK'S HINTS TO YOUNG CARPENTERS.—This book is a publication from the English edition, "with Notes and Hints to persons about building in the Country," by A. J. Downing, a name well known in our country. This work is entirely different from the one mentioned above, the first teaches the tradesman—lays the foundation, while this one is another step in the progress of constituting a scientific and finished architect.

Its notes treat the question, "Where to build, what to build, and how to build;" also the manner of making out specifications, agreements, &c.

The next part of it is a fine essay on "Design," and the concluding part (the largest) embraces the whole minutiæ of a structure, plumber work, slating, and the specification of every stone, stick and apartment necessary to complete a good and convenient building.

This work is also published by Mr. Wiley; its price is $1,50. We will attend to orders for any of our subscribers.

DICTIONARY OF MECHANICS—ENGINE WORK AND ENGINEERING.—This is the title of a new work, issued by D. Appleton & Co., N. Y. It is designed after the principle of Ure's Dictionary, only that it is more devoted to the Mechanical and Engineering professions, and above all it is valuable, as accomplishing for America what Ure has done for England, viz., describing American machinery and works of art. This first part contains seventy wood engravings, some of them are really good; it illustrates and describes the Croton Water Works of this city. It is issued in parts at 25 cents each, to be completed in 40 numbers—only $10. It is edited by O. Byrne, Esq., an able mathematician and author.

FOR THE FARMER.—AMERICAN POULTRY YARD.—This is a very neat volume, illustrated with numerous engravings, forming a complete treatise on the best kinds of fowls to keep, with the manner of treating them for every purpose and in every State. This book is not a dry morsel, merely describing such and such fowls, illustrated with hen coops, feeding troughs, &c. It is an interesting work on the natural history of the fowls, as well as the mode of raising and treating them. It is illustrated by D. J. Brown, author of the Silva Americana, with an appendix by S. Allen. It is published by C. M. Saxton, New York.

We will regularly notice other useful works, a number of which we have *marked* out to carry out the design mentioned above.

The Working of the Telegraph.

MR. EDITOR—From an article in the Scientific American of the 5th inst., I take the liberty of laying before you what I have learned by two years' practical experience as regards the necessary battery for working a given distance by telegraph.

The longest distance I have known worked successfully was 426 miles—though at times much greater distances could be worked well; the battery used was 40 cells of Groves, 10 at each end of the circuit, and 20 at two intermediate stations. Much depends on the perfect insulation of the line, the nature of the country through which it passes, the size of wire, and the magnets in use. Lines running along railroads work much better and with less battery than those passing through forests, which I suppose may be accounted for by the wire being placed on poles instead of trees, and being entirely free from contact with any thing that would form a short circuit. I have written 300 miles with seven cells, and have never known more than 10 used to advantage, at any one station, be the distance ever so great. Where that number did not do well, it was from want of perfect insulation, and by adding battery it increased the local circuit to such an extent that it was impossible to break it at any station, except where the excess of battery was placed, and although the operator having the strong battery could write to another's station, he could get writing from none.

The country between Mobile and New Orleans is an instance of the difficulty of writing through a damp atmosphere, for although it is only 190 miles by telegraphic line, yet it is with difficulty they can write that distance, and it requires the most strict attention to the line to keep it in working order, while on the same line they work in many places over 400 miles. * * *

Cheraw, S. C., July 8th, 1850.

[The above is useful information, to enable us to judge of some difficulties in the way of an *Ocean Telegraph*.—ED.

Remarkable River.

The Florida Sentinel contains an account of the examination, by a committee of scientific gentlemen, of the river Wacissa, in Florida, with a view of testing its capacity for a water power for manufacturing purposes, and the practicability of connecting it with the St. Mark's by a canal. The head waters of the river are thirty-two feet above the high water in the St. Mark's, at Newport. The Sentinel describes the Wacissa river as one of the natural curiosities almost peculiar to Florida. It takes its rise, like the Wakulla, in springs of great volume, forming an immense basin with bold shores, from which it runs in a S. S. E. direction, in a deep and broad stream, about fourteen miles, to a swamp, where most of it disappears through a subterranean channel, by which it is discharged into the Gulf. This river is said to contain a greater volume of water than the Potomac or James River, and like all rivers having a similar rise in Florida, it is affected neither by drought nor freshet, affording one steady, uniform and unvarying current all the year. The committee are of opinion that more than ten times the water power of Lowell can be found there at a small expense.

A White Negro.

The North-Carolinian tells a story of a slave who has gradually become white. The change is supposed to hav been caused by the bite of a rattle snake, which occurred some ten or more years since. He was formely as black as any African, and now shows no sign of the negro except the kinks in his hair.

The Gipsies.

A late English paper, speaking of the gipsies, says:—This mysterious and wonderful people are rapidly fading away. Lines of railroads run through the glens they haunted, and the whistle of the steam engine harshly breaks the solitude of the woods which the gipsey tradition and superstition had invested with romance.

In Belgium, every acre of ground supports three persons. What a population the United States could maintain at that rate—not less than 7,500,000,000 souls.

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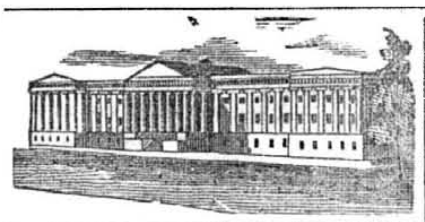

LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending January 15, 1850.

To Homer Adkins, of Round Prairie, Ill., for improvement in Mowing Machines.

I claim the master wheel constructed with cogs on its face, in combination with the rocking shaft constructed with two knobs or projections on it, to give a rocking motion to the said shaft, in the manner substantially as described.—[See Engraving in No. 2, Vol. 5, " Sci. Am.]

To J Bailey, of Leatherwood, Ohio, for improvement in Gates for fences.

I claim the method of balancing and adjusting gates by the panel of fence secured to the gate post, substantially as set forth.

To John Binder, of Chelsea, Mass., for improvement in folding Bedsteads.

I claim arranging said centre joint with the centre rivet below the other two in combination with the curving of the adjacent edges of the parts of the side bars—so as to rest upon said centre rivet as described, and also the forming of the inner connecting bar with lateral projections or shoulders which, when the bedstead is open shall rest on the top of the two cross bars of the bedstead adjacent to the joint in the side bars of the same, all as herein above set forth.

To F. Bleier, of Pittsburgh, Pa., for improvement in Dampers for cleaning stove pipes and regulating the draft in the same.

I claim the scraper with the rods attached in such a manner that it may be used for the purpose of cleaning the stove pipe, and also to act as a damper, as set forth.

To C. W. Brown, of Boston, Mass., for improvement in Mills for grinding.

I claim the employment of a sliding adjustable tube within and in combination with the bush of the stationary stone and the spindle, for the purpose and in the manner substantially as described.

To C. Carnell, of Kensington, Pa., for improvement in Brick Presses.

I claim, first, the arrangement of two levers by which arrangement the bearing of the one is near the fulcrum of the other, thereby giving the operator power to start the brick out of the mould, and by which arrangement the motion of the piston is increased by the bearing of one lever on the other.

To E. D. Dodd, of Cincinnati, Ohio, for improvement in Files for keeping papers.

I claim the top consisting of a stationary part for about half its length and a lid hinged thereto for the remainder, in conjunction with the end lid and one or more side openings, substantially in the manner and for the purpose described, namely, that of combining with sufficient facility of reference, the greatest attainable dispatch in the abstraction and insertion of papers, and moreover constituting when closed a secure and portable paper holder.

To Wm. W. Finch, J. Blaisdell and L. Babbitt, of Essex Co., N. Y., for improvement in Obstetrical Supporters.

What we claim is the combination of the back supporter, feet straps and adjustive shoulder braces, constructed as described, with the back pad, by which the female is enabled to apply the necessary pressure to the back, by the simultaneous or alternate action of the shoulders and feet on the straps connected with the back pad for relieving the labor and irritation of parturition, without the assistance of any other person, as herein fully set forth.

To John E. Heath of Warren Ohio, for improvement in Harvesting Machines.

What I claim is the mode of cleaning the cutters, by giving them at suitable intervals a larger vibration than ordinary, substantially in the manner herein set forth, thus detaching the dirt and gum which accumulates upon them.

To John and Wm. D. Howell, and Joseph Sipe, of Clarke Co., Ohio, for substitute for the Clevis.

What we claim is the combination of the crown-head and bolt, with the upright, by which the plow is made to cut any width and depth desired, made substantially as herein described.

To S. Jackson, of Hamilton, Ohio, for improvement in Cider Mills.

I claim, first, the cutter drum with its teeth, running into other teeth in the bed mould, used to grind the fruit or juicy substance.

Second, the strap made of felting, hair cloth or other porous fabric, used to carry the pomice, or ground substance between the pressing drums, where it is pressed, and to strain the juice thus expressed.

Third, the press drums used to press the juice from the pomice, or ground substance.

Fourth, the brush used to remove the pomice or ground substance from the strap, all of the above being performed by one application of power and continued rotary motion.

To Wm. Kennish, of Paterson, N. J., (Assignor to C. S. Van Wagoner,) for improved arrangement of the valves of hydraulic engines.

I claim the arranging four register valves upon one spindle in such a manner, with reference to each other and their seats, so that the pressure upon any one of them shall be counterbalanced by the pressure upon some other of them, substantially in the manner herein described, for the purpose of regulating the induction and eduction to and from hydraulic engines.

To R. Kittle, of Dansville, N. Y., for improvement in machinery for tonguing and grooving.

I claim the placing the finishing, grooving and tonguing cutters, in the same heads with the primary grooving and tonguing cutters, and in reversed positions thereto, when the said cutter heads are connected to operating cranks at one end, and are jointed to working levers at points between the primary grooving and tonguing cutters and the finishers, substantially as above described, for the purpose of giving to the said cutters the movements and action herein set forth.

To G. R. Kelsey, of Middletown, Conn., for improvement in Buckles.

I claim the mode of making buckles entire from a single piece of sheet metal, as above described, the buckle opening and shutting by means of the spring given to it in the construction thereof, as aforesaid.

To Wm. Maguire, of Cincinnati, Ohio, for improved Door Lock.

[This patent has four claims; no idea of the nature of the invention can be had from publication.]

To N. G. Norcross, of Lowell, Mass., for improvement in Circular Saw Mills.

I claim the application to circular saw frames, of rocker boxes and a swing frame, as herein set forth, and suspending said frame in position, by means of the driving belt, as above described, for the free and successful operation of the saw, by the motion before mentioned.

To J. G. Reed, of Paterson, N. J., for improvement in spindles and bobbins for spinning.

I claim the making the life spindle or bobbin tube, with two conical shoulders, substantially as described, in combination with the conical supports in which they run, one or both ends being adjustable, substantially as described.

And finally I claim the method, substantially as described, of driving the life spindle by means of a waive tube running on a dead spindle or a step, and embracing the lower end of the spindle, substantially as described.

To A. Straub, of Milton, Pa., for improvement in Winnowing Machines.

I claim the combination of a series of wind passages, with a separating chamber, or other device, for presenting the foul grain to the action of the blast, and a fan for producing the blast, substantially as herein set forth.

To T. Taylor, of Loudoun Co., Va., (Assignor to M. Taylor, of Govanstown, Md.) for improvement in fastening for harness hames.

I claim the combination of the hook lever and metallic plate, secured to the lower end of one of the hames for tightening or slackening the connecting strap attached to the lower end of the fellow hame, and for the purpose herein fully set forth by which the hames may be connected and disconnected instantaneously by simply moving the hook lever in the arc of a circle; thus doing away with the troublesome and insecure fastening usually employed to connect the lower ends of hames.

To A. Weikart, of Greenford, Ohio, for improvement in boring machines.

I do not claim to be the original inventor of an adjustive boring machine, to be affixed to the stationary timber to be bored, as I have heretofore patented such a machine; but what I claim is the combination of the jointed hook lever, pawl, notched plate, perforated flanched plate, crane, adjustive champing block, with the adjustive stock, for adjusting and confining the bearings of the boring tool to the timber to be bored in any desired position for boring holes in the timber at any required angle without moving the timber, as described.

For the Scientific American.

What to do with the Patent Fund.

" There is, as a matter of course, among the inventions of the day, mixed with the well-directed and the useful, much that is wild and visionary, and therefore abortive; and sometimes, perhaps, the vague and for the present, useless foreshadowing of important future discoveries.

But the aggregate value of the labor and study of the class of inventors, is beyond all estimate. They have proved themselves benefactors to their country, and are entitled to the especial consideration and care of Government. The Report of the Commissioner of Patents, which will be presented at an early day, will show a large surplus fund accumulated from their contributions, a part of which was appropriated at the last Session of Congress toward the erection of the wings of the Patent Office Building. No part of this addition is considered necessary for the use of that office."

The above, from the Report of the Secretary of the Interior, no intelligent person will dispute for a moment. Cannot a portion of the surplus fund be appropriated to give correct and practical information, relative to improvements, to the inventors of our country? How often does the inventive mind spend weeks and months in thought, and dollars in experiments in bringing out something which he considers new, and of important utility, when he finds that some one else has already preceded him? He feels disheartened perhaps, and does not try again. Some will say he ought to be better informed on the subject;—I agree with them; but where would a person most naturally seek to know, what had been improved and patented? Could he turn to the Patent Office Report and there find out. Take a volume of the Annual Reports, of some 800 pages, and he finds perhaps 100 pages devoted to a review of some of the most important patents issued, but not a satisfactory description of their construction, or parts even, of the small number treated upon. Who pays the expense of these Reports; and for what purpose are they made? Is it not the inventor; and is not seven-eighths of the volume devoted to agriculture, a subject of little or no interest to him? And was not the Patent Office instituted to promote and advance the Arts and Sciences of our country? I candidly believe that the improvements of mechanical inventions of this country are at least ten years behind what they would have been at present, had our Patent Office Reports, since the foundation of the Office, been made differently. I would have them give the claims of patentees, with explanations by the Commissioner, and also illustrated with cuts, and all that would be necessarry to give correct information to those who seek for it. If a patentee's claims to an invention are not good for anything without it is kept a secret, then I think he had better have no patent.

Philadelphia. J. D. R.

[The above is the doctrine we have advocated. The language used is not too strong to express truth—the sentiments coincide with ours exactly. The whole Patent Office Report for 1848 has not been published yet.

A fine ancient statue of an athlete, has just been dug up in Rome. The proportions of the body are noble; but the limbs and feet, present different ideas of beauty from those we possess.

A. S. Metthews has been appointed Superintendent of the Providence and Worcester Railroad, in place of Mr. Hickley, resigned.

Saguenay River.

The follewing description of this extraordinary river is taken from a pamphlet published by M. Burr, explanatory of his beautiful panorama of the St. Lawrence a work of art far exceeding that of any other ever exhibited in America.

By reference to the old geographies we find no mention made of this river, yet its importance may be arrived at by the fact, that tourists have given it as an opinion, that the volume of water at its confluence with the St. Lawrence, is equal to that of the Mississippi.

" This river enters the St. Lawrence 140 miles below Quebec, and although a mile wide it appears narrow when compared with the mighty St. Lawrence, which at this point is considerably more than 25 miles in width. The Saguenay is one of the important tributaries of the great river; its volume of water is immense, and the depth and force of its current is so sensibly felt at its confluence with the St. Lawrence, that for a distance of several miles, vessels are obliged to yield to its influence. It is decidedly the largest river east of the Alleghany Mountains, the St. Lawrence excepted. From the inky blackness of its waters, and the strange, wild, and romantic character of the scenery along its banks, it may be considered unquestionably the most remarkable river on this continent. Whilst we are approaching the lofty portals of this mysterious stream, a brief description of the region from whence it derives its source, will better enable the reader to form a proper estimate of this great wonder of nature.

In an immense valley, forming part of the territory belonging to the Hudson's Bay Company, and about 42 leagues north from the St. Lawrence, is the beautiful Lake of St. John.—Its form is nearly circular; its diameter, about 30 miles, and it serves as a great natural reservoir, into which 12 rivers and many smaller streams discharge their waters. The Saguenay is the only outlet by which this vast collection of water finds its way to the St. Lawrence. Its scenery is of the wildest and most startling description through its whole length, which is about 130 miles from Lake St. John to Tadousac Bay. The first half of its course lies through a wilderness of hills covered with the pine, the fir, and the spruce, and formidable rapids render the navigation hazardous except to experienced canoemen. But below Chicoutimi, which is 68 miles from its mouth, it is navigable for the largest vessels. From Ha! Ha! Bay, downwards, the passage of its waters is through solid mountains of sienite granite, which seem to have been split asunder by the upheavings of an earthquake, thus forming an immense canal with banks of perpendicular rocks, towering up to 1500 or 2000 feet above the water, which is about 150 fathoms deep nearly the whole distance. Its depth at different points has never been ascertained; it has been plumbed with a line of 330 fathoms, 1980 feet, and that too immediately at the base of the cliff, and no bottom could be found. The power of language is inadequate to describe this great specimen of nature's handiwork, nor is it possible to convey to the reader any conception of it, by adducing any other river scenery as a simile—for nothing like it can be found in North America."

Discovery of a Northwest Passage.

A letter in the Courier and Enquirer dated Mazatlan, Nov. 23, states that the British frigate Amphytrite, sloop-of-war Hecate and the Royal Thames yacht, club schooner Nancy Dawson, arrived on the 19th inst. from the Northern Ocean. The writer affirms that they have discovered a nothwest passage in lat. 73 and lon. about 30½, having gone one degree and a half further north than any vessel had previously been. He also says that they discovered a new continent, but on account of ice could not approach nearer than fifteen miles to land. They did not find Sir John Franklin, and on account of ice were forced to leave.

[This looks like a Munchausen story. If they discovered the passage, why did they not go through it.

There were only 31 deaths in New York during the past week.

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TO CORRESPONDENTS.

"J. T., of Phila."—You cannot make the bar into a magnet of one pole: it will have two poles. The two ends will be different poles, and that is all, and you cannot make a soft bar a permanent magnet. You make it an electro-magnet by covering it with a helix of insulated copper wire, and sending the current through the wire.

"J. R., of Ohio."—The only way of obtaining a patent, is for an improvement on apparatus or mode of manufacture, to produce the economical result. By our laws, the result itself, as in your case, can not be patented. You should have applied whenever your condensers gave such good results, for the improvements are certainly great. The only way for you to do is to make a model, get proper drawings and specifications made out, and apply for a patent, confining your claim to the new parts that produced the good result. No other way for you but this.

"J. A. F., of Ala."—We would sincerely advise you not to expend any more money on your rotary.

"H. O. M., of Md."—We believe that the clocks are somewhat different, and that the inventions are *striking* the same, but produced by separate individuals, unknown to one another. We know of a number of such cases. The inventor lives at Hulme, an obscure place in England. We will note the difference next week.

"N. B. J., of Phila."—You are right; the conditions of experiments should be taken into consideration. It would certainly be a great improvement to supersede the paddle wheels by an invention so simple; we would like to have a full drawing of it for our history. We will notice it next week. We have received a letter from Mr. Martin.

"D. E. S., of Mass."—We regret to be obliged to inform you that your invention is not new. The same device was patented about 2 years ago by a gentleman in this State.

H. A. F. of Mass.—We do not see any advantage to be gained by your new form of piston, if you have to make it thick at the sides, for then you would increase the friction, obviate this and you make an improvement. The paddles are no improvement to our view of things. The gate is a very good thing, but you are aware that a great number of such things have already been tried. We are doubtful if a patent could be secured.

T. R. of Pa.—Friction rollers have been long used for bearings, $6 received and credited, as per request.

H. J. of N. Y.—You could not get a patent for your manner of applying the power to gum saws, as it is a well known plan in some punching machines, and is embraced in Dick's Press. Yours appears to be a good machine, but we are doubtful if a patent could be secured.

S. H. P. of N. Y.—We can tell you all about the cotton warps and woolen fillings, but your question is not very plain.

D. H. of N. J.—We have no new information in regard to hanging bells, if we can find any thing in future, we will publish it.

J. L. D. of Geo.—You will see that the ques- upon the crank has been answered and we drop the subject.

E. L. W. of N. Y.—No patents have been granted on Crayon Paintings last year. We are always happy to get new information upon any subject.

Q. J. S. of N. Y.—It is not a *correct* law that a round tube is better than any other form, a rectangular hollow tube is the strongest. We have said so much on this subject that we do not deem it justice to our readers to provoke any new discussion. Make the machine and then we will say "you have done what no other person has done, and what we believe no man can do." Many flying machines have been made already, it is as old an invention as the steam engine. "The thing is to reduce it to economical and safe practice.

"E. S. H. of N. Y."—The principle found in your bedstead fastner, is not new, but has been used for the same and other purposes before, the plan is very simple and will work well but no patent can be obtained for it. $2 received and credited for 1 years subscription.

A. S. T. of Mass.—Wessons' fine rifles are probably as true shooters as any other made. They are not calculated for smashing. Manufactured at Hartford, Ct.

J. A. T. of Ala.—We do not think any patent could be obtained for your engine. The combination of a vacuum with the steam cylinder was used by James Watt, in his rotary reciprocating engine. The principle is well known to engineers. This opinion you may rely upon.

E. C. J. of Mass.—The drawing of your bark breaker has been examined, we are of the opinion that it is new, and patentable. Branca was the inventor referred to.

R. N. of Miss.—Compasses have been used for drawing eclipses having disks arranged eccentric to each other, but they may differ from yours, perhaps it would be well to make out a drawing and description of it.

G. B. of N. Y.—You had better communicate with Mr. A. in relation to the lathe, he has used them, and can give you better advice than we are able to.

J. H. P. of N. Y.—Your inventions are not new, the engine is in the same principle as Branca's of ancient date. The Press is inferior to Dick's Patent and several others we could mention.

C. J. of N. Y.—Mr. B. has made application for letters patent, but its fate has not yet been decided. The two plans may be similar.

"A. K. of N. H."—The principle of your water power is well known, and was described in vol. 2. Sci. Am. by Mr. Bishop, machines for this purpose, worked by hydraulic pressure, are now used in Liverpool and Glasgow. We should think your means of working it to be new, although it is not fully described. It might be well to construct a small model and forward it to us for examination. The principle is not patentable.

D. Anthony's engravings have been found and will be forwarded to his order.

"J. R. J. of Md."—If we hear of any opportunity for the exchange proposed, we will inform you, at present we are unable to answer satisfactorily.

"L. R. of N. Y."—As soon as we hear from the Commisioner we will inform you how to proceed.

"F. S. B. of N. Y."—We cannot answer your question in regard to friction. *Your perpetual motion is not new.*

"J. T. of Ala."—We do not comprehend your meaning in regard to a lathe. For what purpose do you wish it.

"J. M. of Canada."—We regret that we cannot refer you to parties who manufacture pails and shoe peg machinery, perhaps some one in the business who may chance to see this, will inform us. Mr. A. C. Hill, of this city is agent for Johnson's Shingle machines. We think they are very good operators. $10 received and credited to each subscribers.

"K. A. P., of L. I."—Neither the top nor botton can be said to move one point faster than the other, the whole circumferance moves in unison.

"J. M. B. of N. Y."—If you wish to experiment with your invention before making application you had better file a caveat which will secure you against piracy. The U. S. fee is $20,00.

J. P. G. of Me.—Your boring machine appears to us to be very handy and easy to operate, but we are of the opinion that it contains some of the features found in Jones' Patent, yours appears to be operated different from his, but the drawing is so small that we cannot get a clear understanding of it. You had better construct a small model and forward it for examination.

We have received several Communications which will be answered as soon as we can get to them. Correspondents will please bear in mind that we cannot always reply to their questions "by return of mail" we have other things to do besides answer letters, consequently we must ask some indulgence. Mrs Mains, Mr. Angi, Mr. Mason and several other who have not been answered in this number will receive attention by letter.

Notice.

Correspondents must bear in mind that no attention can be paid to letters that do not have a genuine Signature attached,—also, that they must express their ideas in as brief a manner as possible, and pay the postage on their communications *in all cases.*

By attending to the above rules, your letters will be far more likely to receive prompt attention, and you will confer an incalculable favor upon the Editors and Publishers.

G. B. M, of Texas; D. J., of Mass.; W. P., and T. & G., of N. Y.; J. S. A. and G. & G., of N. Y:—

The specifications and drawings of your several inventions have been forwarded to the Patent Office since our last issue.

Money received on account of Patent Office business, since Jan. 16, 1850:—

T. S., of N. J., $40. G. B. M., of Texas, $26. W. P., of N. Y., $20. R. M. S., of Ky., $30. G. & G., of N. Y., $29. F. D. N, of O., $35, and F. S. N. of Conn., $45; J. C. of N. Y., $30.

Notice.

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

Back Volumes.

We are no longer able to supply Vols. 1, 2 and 3 of the Scientific American. We have on hand about 50 copies of the 4th, Volume bound, price $2,75, if any of our subscribers are intending to order a copy, they had better do so without delay.

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Gilroy's Art of Calico Printing,	5,00
"Scientific American," Vol 4, bound,	2,75
Minifie's Drawing Book,	3,00
American Steam Engine, Plate and Book of Description	3,00
Scribner's Mechanics, Tuck, Gilt,	1,50
Treatise on Marine and Naval Architecture,—published monthly, each No.,	,75
Leonard's Mechanical Principia,	1,50
Mahan's Civil Engineering,	3,00
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Instructions for Testing, Melting, and Assaying Gold	,25

Patent Office.

128 FULTON ST.

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MUNN & CO.,
128 Fulton street, New York.

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Scientific Museum.

For the Scientific American.

On Tanning Leather.--Preparation of Hides.

(Continued from page 144.)

Having explained the principles of tanning, the articles employed, and different modes of working, we will now offer a few remarks upon the subject.

It is well known that during cold weather hides do not imbibe the tannin so fast as during warm weather, except the tan pits are enclosed, and the building kept at a certain heat. To do this the tan vats are kept under cover, and packed up at the sides with dry tan bark (a good non-conductor.) It is true that some small tanneries have their pits out doors, but then they cannot work during winter. The tan vats should never be allowed to freeze. If the tan liquor freezes, its qualities are destroyed, so in no case should it be allowed to get to the freezing point. A thermometer should be employed in every tan factory, and the heat regulated. There is nothing like punctuality and care—this is the very root of science.

In our opinion, the best way to keep a tannery, is to use steam for heating and boiling. We would have a large strong steam boiler capable of raising all the steam required, with a pressure not above 7 pounds. From this boiler we would have leading cast iron pipes, running tight into and around the bottom of all the tan vats, and would have the pipes in the vats perforated with small holes. Cocks should be employed to shut off the steam, at any moment. We would heat all the vats in this way, and keep up a regular low heat in the liquors during the cold weather. It would appear to be an improvement also to boil the ground tan bark and use only the clear liquor in the vats. A large cast iron boiler would do to boil the bark in and when boiled, if the fire be drawn, in a few minutes all the bark will fall to the bottom, and the clear can be pumped or pailed out, into small gutters, to convey the liquor to any vat or vats in the factory.

Another good plan would be to put two loops of stout cord in every hide—one at each end. By running two poles through these loops, all the hides would be finely suspended from the top of the vat; into the liquor, and would be more evenly tanned.

Gentle pressing out of the liquor appears to facilitate the process, but no pressure must be applied that would close the pores of the skin. The great thing, as we stated before, is frequent airing of the skins, good handling by whatever means, and care of the liquors.

TAWING, CURRYING, AND LEATHER DRESSING.

The dressing of lamb, sheep, goat and other thin skins, although resembling the methods described for hides, forms a distinct branch of business, and requires great skill and nicety of operations, to succeed perfectly. The processes are various, according to the article required, such as for morocco leather of different colors and qualities, and thin leather for other purposes. Of these the white leather alone, is not tanned, but the colored leather always receives a tanning, generally of *sumac*.

Lamb-skins are prepared by first soaking them for a time in water to remove any loose dirt and blood, and then placing them upon a beam composed of a half cylinder of wood covered with strong leather, and scraped on the flesh side with the semi-circular blunt knife, commonly used in this operation. They are then hung up in considerable numbers in a small close room heated by flues, where they remain to putrify for a given time. During this process a thick filthy slime works up to the surface of the skin, by which the regularity of the process is judged of, and the wool is loosened so that it readily comes off with a slight pull. Each skin is then returned to the beam, the wool taken off and preserved, and all the slime worked off with the knife, and the rough edges pared away. The skin is then put into a pit filled with lime-water, and kept there from two to six weeks, the time depending upon the nature of the skin: this has the effect of checking the further putrifaction, and produces a very remarkable hardening and thickening of its substance, and probably, also, it detaches a further portion of the slime.—The skin is again well worked upon the beam, and much of its substance pared down, and all inequalities smoothed with the knife. Much care and judgment are required in these operations: on the one hand not to endanger the substance of the skin by the putrefaction, which, if carried on too long, would soon reduce it to an incohesive pulp; and on the other hand to work out every particle of the lime, the least of which, if retained, will prevent the skin from dressing well in the subsequent processes, and from taking the dye uniformly.

History of Propellers and Steam Navigation.

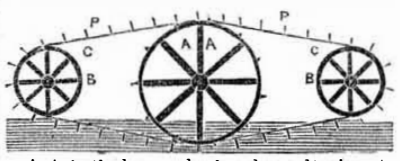
[Continued from page 144.]

In the Repertory of Arts there is a description of a patent granted (1826) to a Mr. Palmer, of the Royal Mint, which strongly resembles the one granted to the Engineer of the American Mint, the co-partner of John Fitch. This invention consisted of chains passing horizontally along the sides of a vessel, or along the bottom, between false keels, with paddles jointed to a guide frame to which they are attached in such a manner, that when the chain is drawn in a direction from stem to stern, the paddles will be kept in a perpendicular position by small check chains, proceeding from the lower extremity of the paddle, to the main chain or guide frame, in an angular position; thus forming a resistance to the water, which propels the vessel forwards, as the chains with the paddles are dragged backwards. When the horizontal parts of the chains are returned, or moved from sterm to stem, the paddles fold up and take a horizontal position with the chains, and therefore form no resistance in passing through the water. The chains are kept in their places by passing over guide pulleys at each end of the horizontal or lower ports, and over wheels at the upper ports. The wheels are furnished with spikes on their peripheries, which take into the links of the chains. These wheels are put in motion by a band passing over a drum in connexion with a steam engine, and round a small rigger attached to the axis of each of the spiked wheels.

If the paddles be used on the sides of the vessel, the spiked wheels and guide pulleys are attached to triangular frames, which are firmly fixed to the sides. But if they be applied to the bottom of the vessel, (when they are used for barges on canals, as they will in that case agitate the water less, and consequently do less injury to the banks of the canal,) they must be placed between false keels.

The accompanying engraving is a modification of this invention:

FIG. 18.

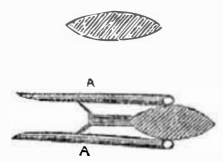


A A is the large wheel or drum, having studs on its circumference to work the chains both above and below. B B two smaller drums, over which the chain passes, which serve to keep it in the proper position, and each of which have raised edges to prevent the chains from slipping off. One of the small drums is made to move by a screw, so as to tighten or slacken the chain when required; and both may be made to fix either higher or lower, so as to give the paddles a greater or less sweep or stroke of the water. The paddles, chains, drums, and the water line are shewn, the small drums being raised above the centre of the large drum. C C are parts of the chain; P P P P the paddle boards.

The next is a very curious contrivance, by a Mr. Nairn, of equal age with the above.

Two, four, or more levers are to be suspended over the sides of a vessel, and to descend nearly as low as the vessel's keel. These levers are to be moved backwards and forwards, like a pendulum, the motion being communicated by a steam engine, or other prime mover; and that the levers may experience but little resistance from the water, they should be of such a shape as to present in their horizontal section a form like the adjoining figure.

FIG. 19.



At each side of the lever, at its lower extremity, is attached a broad plate of iron, A A, fig. 20, by means of hinge joints, which, upon the lever being moved forward, close, and offer no resistance; but when it is moved backward, they open or expand, and thereby impel the vessel forward. To prevent their opening beyond the proper angle, which is from 140 to 160 degrees, a circular arc may pass through them, or they may be connected to chains, which only allow them a certain range of opening, or any other method to admit their expansion within due limits.

There have been many previous contrivances for propelling, bearing a resemblance to this, which have failed in practice; and we can discover nothing in the present contrivance calculated to render it an exception. It is just a modification of the duck-foot propeller.

On the Employment and Working of Animal Horn.

Horn, particularly of oxen, cows, goats, and sheep, is a substance soft, tough, semi-transparent, and susceptible of being cut and pressed into a variety of forms, it is this properity that distinguishes it from bone. Turtle or tortoise shell seems to be of a nature similiar to horn, but instead of an uniform colour, it is variegated with spots.

These valuable properties being known renders horn susceptable of being employed in a variety of works fit for the turner, comb, and snuff-box maker. The kind of horn most to be preferred, is that of goats and sheep, from its being whiter and more transparent than the horn of any other animal. When horn is wanted in sheets or plates, it must be steeped in water, to be able te separate the pith from the kernel, for about fifteen days in summer, and a month in winter; and when it is soaked it must be taken out by one end and well shaken and rubbed, in order to get out the pith; after which it must be put for half an hour in boiling water, and then taken out, and the surface sawed even, lengthways; it must again be put into the boiliug water to soften it, so as to render it capable of separating; then with the help of a small iron chisel it can be divided into sheets or leaves. The thick pieces will form three leaves, those which are thin will form only two, whilst young horn, which is only one quarter of an inch thick, will form only one. These plates or leaves must again be put into the boiling water, and when they are sufficiently soft, they must be well worked with a sharp cutting instrument, to render those parts that are thick even and uniform; it must be put once more into the boiling water, and then carried to the press.

At the bottom of the press employed, there must be a strong block, in which is formed a cavity of nine inches square, and of a proportionate depth; the sheets of horn are to be laid within this cavity, in the following manner: at the bottom, first a sheet of hot iron, upon this a sheet of horn, then again a sheet of hot iron, and so on, taking care to place at the top a plate of iron even with the last, and the press must then be screwed down tight.

There is a more expeditious process, at least in part, for reducing the horn into sheets, when it is wanted very even. After having sawed it with a very fine and sharp saw, the pieces must be put into a boiler used for the purpose, and then boiled until sufficiently soft, so as to be able to be split with pincers; then bring quickly the sheets of horn to the press, where they are to be placed in a strong vice, the clasps of which are of iron, and larger than the sheets of horn, and screw the vice as quick and tight as possible; let it then cool in the press or vice, or it is as well to plunge the whole into cold water. The last mode is preferable because the horn does not dry up in cooling. Now draw out the leaves of horn, and introduce other horn to undergo the same process. The horn so enlarged in pressing, is to be submitted to the action of the saw, which ought to be set in an iron frame, if the horn is wanted to be cut with advantage, in sheets of any desired thickness, which cannot be done without adopting this mode. The thin sheets thus produced, must be kept constantly very warm between the plates of hot iron to preserve their softness. Every leaf must be loaded with a weight heavy enough to prevent its warping. To join the edges of these pieces of horn together, it is necessary to provide strong iron moulds suited to the shape of the article that is wanted, and to place the pieces in contact with copper plates, or with polished metal surfaces against them; when this is done, the whole should be put into a vice and screwed up tight, then plunged into boiling water, and after some time it is to be removed from thence, and immersed in cold water, which will cause the edges of the horn to cement together, and become perfectly united.

To complete the polish of the horn, the surface must be rubbed with sub-nitrate of bismuth, by the palm of the hand. The process is short and has this advantage—that it makes the horn dry promptly. When it is wished to spot the horn in imitation of tortoise shell, metallic solution must be employed as follows: To spot it red, a solution of gold in aqua regia must be employed; to spot it black, a solution of silver in nitric acid must be used; and for brown a hot solution of mercury in nitric acid. The right side of the horn must be impregnated with those solutions, and they will assume the colour intended. The brown spots can be produced on the horn by means of a paste made of red lead, with a solution of potash, which must be put in pieces on the horn, and subjected some time to the action of heat. The deepness of the brown shade depends upon the quantity of potash used in the paste, and the length of time the mixture lies on the horn.—A decoction of Brazil wood, a solution of indigo with sulphuric acid, a decoction of saffron, and Barbary tree wood is used. After having employed these materials, the horn may be left for half a day in a strong solution of vinegar and alum.

LITERARY NOTICES.

Messrs. Fowlers & Wells have just issued an edition of Sherwood's Manual for Magnetizing with the Vibrating Magnetic Machine, together with a brief Synopsis of Animal Magnetism, Homœpathy and Allopathy, with several anatomical illustrations and observations upon the treatment of disease. We commend this work to the attention of our readers.

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